

DERWENT-ACC-NO: 2001-355400

DERWENT-WEEK: 200137

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TITLE: Substrate processing for semiconductor fabrication involves contacting substrate with supercritical carbon dioxide and aqueous fluoride to remove any photoresist residue and/or etch residue

INVENTOR: BIBERGER, M A; MULLEE, W H ; SCHILLING, P E

PATENT-ASSIGNEE: SUPERCRITICAL SYSTEMS INC[SUPEN]

PRIORITY-DATA: 2000US-0697227 (October 25, 2000) ,  
1999US-163116P (November 2,  
1999) , 1999US-163120P (November 2, 1999) , 2000US-199661P  
(April 25, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
PAGES	MAIN-IPC	
WO 200133613	May 10, 2001	E
027	H01L 021/00	
A2	May 14, 2001	N/A
000	H01L 021/00	
AU 200114550	A	

DESIGNATED-STATES: AE AL AM AT AU AZ BA BB BG BR BY CA CH  
CN CR CU CZ DE DK DM E  
E ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ  
LC LK LR LS LT LU LV  
MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ  
TM TR TT TZ UA UG UZ  
VN YU ZA ZW AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE  
IT KE LS LU MC MW MZ N  
L OA PT SD SE SL SZ TR TZ UG ZW

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
APPL-DATE		
WO	N/A	2000WO-US30218
November 1, 2000		
200133613A2	N/A	2001AU-0014550

November 1, 2000  
AU 200114550A      Based on  
N/A  
AU 200114550A

WO 200133613

INT-CL\_(IPC): H01L021/00

ABSTRACTED-PUB-NO: WO 200133613A  
BASIC-ABSTRACT: NOVELTY - Substrate having silicon dioxide (SiO<sub>2</sub>) surface which supports material such as photoresist, photoresist residue and/or etch residue, is contacted with supercritical CO<sub>2</sub> and aqueous fluoride such that the fluoride undercuts SiO<sub>2</sub> surface from material. The undercut material is then contacted with supercritical CO<sub>2</sub> such that undercut material separates from SiO<sub>2</sub> surface and removed from substrate.

DETAILED DESCRIPTION - The aqueous fluoride is aqueous ammonium fluoride and/or hydrofluoric acid.

An INDEPENDENT CLAIM is also included for removal of material from silicon dioxide surface.

USE - Removing photoresist and photoresist residue from substrate using supercritical carbon dioxide in semiconductor fabrication.

ADVANTAGE - The photoresist and residue are effectively removed from the surface using supercritical carbon dioxide.

CHOSEN-DRAWING: Dwg.0/8

TITLE-TERMS:  
SUBSTRATE PROCESS SEMICONDUCTOR FABRICATE CONTACT SUBSTRATE  
SUPERCritical  
CARBON AQUEOUS FLUORIDE REMOVE PHOTORESIST RESIDUE ETCH  
RESIDUE

DERWENT-CLASS: L03 U11

CPI-CODES: L04-C06B; L04-C09;

EPI-CODES: U11-C04A1C;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2001-110131

Non-CPI Secondary Accession Numbers: N2001-258256

6	47943	sulfur adj trioxide or so3 or "so.sub.3"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:23
7	14	((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same (carbon adj dioxide or co2 or "co.sub.2")) same (sulfur adj trioxide or so3 or "so.sub.3")	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:23
8	235797	carbon adj dioxide or co2 or "co.sub.2"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:25
9	3458361	organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:27
10	157806	(organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation)) ) near2 (clean\$3 or remov\$3 or strip\$4)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:28
11	14	(supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same (sulfur adj trioxide or so3 or "so.sub.3" ) same (carbon adj dioxide or co2 or "co.sub.2")	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:28
12	4	((organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation)) ) near2 (clean\$3 or remov\$3 or strip\$4)) and ((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same (sulfur adj trioxide or so3 or "so.sub.3" ) same (carbon adj dioxide or co2 or "co.sub.2"))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:30
13	5529	(supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((carbon adj dioxide or co2 or "co.sub.2") or ammonia or nh3 or "nh.sub.3" or "h.sub.2 o" or nitrous adj oxide or n2o or "n.sub.2 o" or carbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or helium or he or neon or ne or argon or ar or kr or krypton or xenon or xe)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:39
14	143	((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((carbon adj dioxide or co2 or "co.sub.2") or ammonia or nh3 or "nh.sub.3" or "h.sub.2 o" or nitrous adj oxide or n2o or "n.sub.2 o" or carbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or helium or he or neon or ne or argon or ar or kr or krypton or xenon or xe)) same ((organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation)) ) near2 (clean\$3 or remov\$3 or strip\$4))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:38

15	2018	(supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((sulfur adj trioxide or so3 or "so.sub.3" ) or sulfur adj dioxide or sio2 or "si.sub.2" or "h.sub.2 o.sub.2" or h2o2 or hydrogen adj peroxide or nitrous adj oxide or n2o or "n.sub.2 o" or acrbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or "f.sub.2" or "cl.sub.2" or "br.sub.2" or ozone or oxygen or "o.sub.3" or "o.sub.2")	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:46
16	1675	((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((carbon adj dioxide or co2 or "co.sub.2") or ammonia or nh3 or "nh.sub.3" or "h.sub.2 o" or nitrous adj oxide or n2o or "n.sub.2 o" or acrbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or helium or he or neon or ne or argon or ar or kr or krypton or xenon or xe)) same ((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((sulfur adj trioxide or so3 or "so.sub.3" ) or sulfur adj dioxide or sio2 or "si.sub.2" or "h.sub.2 o.sub.2" or h2o2 or hydrogen adj peroxide or nitrous adj oxide or n2o or "n.sub.2 o" or acrbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or "f.sub.2" or "cl.sub.2" or "br.sub.2" or ozone or oxygen or "o.sub.3" or "o.sub.2"))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:46
17	37	((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((carbon adj dioxide or co2 or "co.sub.2") or ammonia or nh3 or "nh.sub.3" or "h.sub.2 o" or nitrous adj oxide or n2o or "n.sub.2 o" or acrbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or helium or he or neon or ne or argon or ar or kr or krypton or xenon or xe)) same ((supercritical\$3 or super adj critical\$3 or super-critcal\$3 ) same ((sulfur adj trioxide or so3 or "so.sub.3" ) or sulfur adj dioxide or sio2 or "si.sub.2" or "h.sub.2 o.sub.2" or h2o2 or hydrogen adj peroxide or nitrous adj oxide or n2o or "n.sub.2 o" or acrbon adj monoxide or co or nitrogen or n2 or "n.sub.2" or "f.sub.2" or "cl.sub.2" or "br.sub.2" or ozone or oxygen or "o.sub.3" or "o.sub.2")) same ((organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation)) ) near2 (clean\$3 or remov\$3 or strip\$4))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:46
-	5	VAARSTRA-B-A-.in. VAARSTRA-BRIAN-A-.in.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:28
-	125	VAARTSTRA-B-A-.in. VAARTSTRA-BRIAN-A-.in.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:32
-	3458361	organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:25

-	12338	supercritical\$3 or super adj critical\$3 or super-critcal\$3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:18
-	47943	sulfur adj trioxide or so3 or "so.sub.3"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:23
-	102641	sulfur adj dioxide or so2 or "so.sub.2"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:46
-	16280	nitrous adj oxide or n2o or "n.sub.2 o"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:47
-	739262	ozone or oxygen or o3 or o2 or "o.sub.2" or "o.sub.3"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:49
-	95138	hydrogen adj peroxide or h2o2 "h.sub.2 o.sub.2"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:49
-	217430	f2 or fluoride or "f.sub.2"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:50
-	674611	cl2 or chloride or "cl.sub.2"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:50
-	148131	br2 or bromide or "br.sub.2"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:51
-	19	(supercritical\$3 or super adj critical\$3 or super-critcal\$3) same (sulfur adj trioxide or so3 or "so.sub.3")	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:56
-	31758	(organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation))) near3 strip\$4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:58
-	20789	(organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation))) near3 clean\$3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 16:59
-	363	(supercritical\$3 or super adj critical\$3 or super-critcal\$3) same ((organic or polymer\$3 or resist or photoresist or photo-resist or resin or photosensitive or photo-sensitive or (sensitive near (photo or light or energy or radiation))) near3 remov\$3)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/02/21 17:03